TABLE OF CONTENTS

PAGE

AUTHORITY TO FILE 1

INTEREST OF AMICUS CURIAE 2

STATEMENT OF PURPOSE 4

ARGUMENT:

A. Method or Process Patent Claims Are Intended to Cover Inventions Where the Practice of the Invention Is Independent of the Use of Any Particular Apparatus 5

B. The Patent System Is the Only Means by Which a University Researcher Can Be Rewarded For a Meritorious Invention 8

C. The Copyright Laws Do Not Afford Commensurate Protection for Inventions Involving Digital Computers When a Patentable Invention Is Involved 9

D. Only a Small Percentage of All Computer Programs, Even at a University Computation Center, Are Seriously Considered for Patenting 11

CONCLUSION 13

TABLE OF AUTHORITIES

Cases

Baker v. Selden, 101 U.S. 99 (1880) 10

Cochrane v. Deener, 94 U.S. 780 (1877) 6, 8

Corning v. Burden, 56 U.S. 252 (1853) 7

Graham v. Deere, 338 U.S. 1 (1966) 4, 10

Holdridge v. Knight Publishing Corp., 214 F. Supp. 91 (S.D. Calif., 1963) 10

New Process Fermentation Co. v. Maus, 122 U.S. 413 (1887) 7

Peter Pan Fabrics, Inc. v. Martin Weiner Corp., 274 F. 2d 487 (2d Cir. 1960) 10

Prater and Wei, In re, 415 F. 2d 1393 (CCPA, 1969) 5

Telephone Cases, 126 U.S. 1 (1888) 7

Tilghman v. Proctor, 102 U.S. 707 (1880) 7

West v. Francis, 5 Barn. & Ald. 743 11

White-Smith Music Publishing Co. v. Apollo Co., 209 U.S. 1 (1908) 11

Statutes

35 U.S.C. 100 (b) 4, 5, 8, 13

35 U.S.C. 101 ..... 4, 5, 8, 13

35 U.S.C. 103 12

35 U.S.C. 112 4

Other

Yankwich, Legal Protection of Ideas, a Judge's Approach, 43 Va. L. Rev. 375 (1957) 10

In The

Supreme Court of the United States

October Term, 1971

ROBERT GOTTSCHALK, Acting Commissioner of Patents,

Petitioner,

vs.

GARY R. BENSON and ARTHUR C. TABBOT,

Respondents.

On Writ Of Certiorari To The United States Court Of Customs And Patent Appeals

---

BRIEF FOR IOWA STATE UNIVERSITY RESEARCH FOUNDATION, INC., AS AMICUS CURIAE

AUTHORITY TO FILE.

This Brief as *amicus curiae* in support of respondent is filed pursuant to Rule 42-2 of the Supreme Court. The letters of consent from the Petitioner and the Respondent are on file with the Clerk of the Court.

INTEREST OF AMICUS CURIAE.

Iowa State University Research Foundation, Inc. of Ames, Iowa, (hereinafter the "Research Foundation") is a not-for-profit Corporation organized under the laws of the State of Iowa for the purpose of encouraging research and education at Iowa State University.

Since 1938, the Research Foundation has encouraged research and education by granting monies derived from patent licenses based on inventions of Iowa State University faculty members. Revenue from licensing is used to support further research. Over the past 34 years, over 2.6 Million Dollars derived from the Research Foundation from patent licenses has been used to support educational research. The Research Foundation was the financial underwriter of the first computation center at Iowa State University, using funds derived from licensing of inventions assigned to it by faculty members.

Faculty members at Iowa State are not required to assign inventions to the University or the Research Foundation; however, experience has shown that the vast majority choose voluntarily to assign their inventions to the Research Foundation which is better suited to develop the inventions. Each inventor receives a portion of the net royalty income when his patent is licensed.

Iowa State University conducts computer research for both hardware and software in the Departments of Computer Science and Electrical Engineering. A large number of the over 850 members of the Graduate Faculty engaged in research in a wide variety of disciplines (i.e., the physical and biological sciences, engineering, agriculture, veterinary medicine, home economics, the humanities and education) make substantial use of computer programming in their research.

Many of the resulting computer programs are developed to meet specific requirements by those working on the frontiers of knowledge in their specialized fields of research. These programs may often be the only possible way of reducing truly new and useful discoveries to practical utility or of simulating complex systems for study and analysis.

The Research Foundation has a long-standing and deep interest in the Patent Laws as a means of developing inventions, deriving revenue to support educational research and rewarding the results of beneficial and effective research.

The Research Foundation believes that its views on some of the issues raised in the Government's Brief will aid this Court in applying the law to the facts in the present case and in placing these issues in a broader factual perspective than was presented by the Government. In view of its rather unique position as a large and established university-connected research foundation, the Research Foundation also believes that it has a perspective different than respondent.

The Research Foundation has particular interest in filing this Brief to represent not only its own interests but those of a unique group of educators and researchers —namely, independent scientists who spend part of their time in teaching and part of their time in research which is a necessary involvement for educators in the field of science and technology.

The Research Foundation has no concern with the private interests of any party to this litigation.

STATEMENT OF PURPOSE.

As seen by the Research Foundation, the issue before the Court is broader than the narrow issue proposed in the Government's Brief; rather, the issue relates to the propriety of using method or process claims in patent applications in which the invention is directed to a mode or method of processing electrical signals to transform them and produce useful results, such as data. Such inventions relate to communications, control, analysis and simulation. The Government takes the position that if such claims cover programmed digital computers, they are directed to subject matter which is unpatentable under Sections 100(b) and 101 of Title 35, United States Code; but any differences between a programmed general purpose data processor, a specially wired digital computing machine or an analog computer are merely academic when one considers the functions, operation and useful results produced by each.

The purpose of the present Brief is to urge the Court to hold that properly drafted method claims covering machine techniques for processing electrical signals which provide useful results are not rendered unpatentable subject matter under 35 U.S.C. 100(b) and 101 merely because they cover all equivalent steps of an inventive process to provide a useful result. All of the other requirements for the granting of a patent must also be fulfilled, including novelty, meeting the test of unobviousness set forth in *Graham* v. *John Deere & Co.*, 338 U.S. 1, the giving of a complete and adequate disclosure and clear and concise claiming as required in 35 U.S.C. 112, and so on.

ARGUMENT.

A.

METHOD OR PROCESS PATENT CLAIMS ARE INTENDED TO COVER INVENTIONS WHERE THE PRACTICE OF THE INVENTION IS INDEPENDENT OF THE USE OF ANY PARTICULAR APPARATUS.

The Patent Office does not object to the granting of patents on a system wherein a digital computer forms one element of the system, even a very important element. For example, U. S. patent 3,484,560 of Jaeger, et al, entitled "Equipment for Serving Customer-Dialed Calls Including Those Requiring Operator Assistance" issued December 16, 1969, employs a programmable digital computer as a principal element in a complex system for providing operator and other services in a telephone switching network. The Patent Office Board of Appeals was reversed in the case of *In Re Prater and Wei*, 415 F. 2d 1393 (CCPA 1969) which held that claims covering *apparatus* for analyzing spectographic data were directed to patentable subject matter within the meaning of 35 U.S.C. 100(b) and 101, even though the claims read on a programmable digital computer as well as the analog apparatus actually disclosed. The Patent Office did not petition for Certiorari before this Court after the decision in the *Prater* case. In the present case, the Patent Office objects to *process* or *method* claims which are broad enough to read on a method performed in a programmed digital computer.

A large, modern computer facility, such as the one at Iowa State University, has a capability normally much beyond the minimum requirements that would be included in a commercialized invention involving a programmable computer. The data processing, comparing, data gather-

ing, etc. in a commercial version of an invention would be done on a computer which would be designed more specifically to the task than is the large, more general purpose computer available at a typical computation center. Nevertheless, the same invention may equally well be practiced on either a fixed program digital computer, a more specifically designed programmable computer or a larger, more general purpose programmable computer. It is this particular type of invention for which process claims are ideally suited. That is, the mode of treatment of the data signals is independent of the apparatus on which the processing is carried out.

As this Court stated in *Cochrane* v. *Deener*, 94 U.S. 780, which dealt with both method and apparatus patents for manufacturing flour:

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. If one of the steps of a process be that a certain substance is to be reduced to a powder, it may not be at all material what instrument or machinery is used to effect that object, whether a hammer, a pestle and mortar or mill. Either may be pointed out; but if the patent is not confined to that particular tool or machine, the use of the others would be an infringement, the general process being the same. . . . The machine pointed out as suitable to perform the process may or may not be new or patentable; while the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence. (94 U.S. at 787, 788).

From the above, it is apparent that one of the underlying reasons for classifying inventions into the different statutory classes of machine and process is to inform

the public as to what may or may not be done. Thus, the building of a machine cannot infringe a process claim for use of the machine, and likewise, the carrying out of a process by hand or in the mind avoids a claim covering only a machine or apparatus for practicing the process.

It is sometimes difficult to determine whether an invention resides in the machine or in the process, as the two may be almost inseparable. Further, the scope of machine or process claims may be substantially different, as indicated in *The Telephone Cases*, 126 U.S. 1, wherein it was stated:

> The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; . . . Thus, an art—a process—which is useful is as much the subject of a patent, as a machine, manufacture, or composition of matter. (126 U.S. at 533).

There are other decisions of this Court which similarly hold that a process claim is independent of the particular apparatus through which it is practiced. *Corning* v. *Burden*, 56 U.S. 252, *Tilghman* v. *Proctor*, 102 U.S. 707, *New Process Fermentation Co.* v. *Maus*, 122 U.S. 413.

Relating the decisions of these cases to the present facts, if an electrical signal processing method meets the requirements of the Patent Laws and would be infringed by a system which includes as one element an analog computer, then the same method patent must be infringed if a special-purpose, non-programmable digital computer performing equivalent functions of the analog computer in the process is substituted for it. Similarly, a process claim would have to be infringed through the use of a

special-purpose, but programmable digital computer if it performed all of the functions or steps called for in the method claim. The position of the Government in the present case would require that the claim not be infringed by a more general purpose, programmable digital computer. Hence, the Government's position in this appeal if brought to its logical conclusion, would mean that method claims for data processing inventions could be infringed by certain machines, but not others.

It is submitted that the Court must hold that method claims directed to electrical signal processing methods are proper when the practice of the method is independent of the use of any particular apparatus, and secondly, that a method claim which is otherwise statutory, is not rendered unpatentable for covering non-statutory subject matter under 35 U.S.C. 100(b) and 101, merely because the claim is broad enough to read on the operation of a general purpose programmable digital computer, provided that the claim also does not exclude performance of the method in the mind of a human being. The performance of a method in the mind of a human being, for example, a method of computation, is believed to come outside the definition of a patentable process given in the *Cochrane* case, *supra* because the subject matter operated on is not *transformed* in a manner which can be detected. The changing or transformation of electrical signals in a general purpose, programmable digital computer may, of course, easily be detected.

B.

THE PATENT SYSTEM IS THE ONLY MEANS BY WHICH A UNIVERSITY RESEARCHER CAN BE REWARDED FOR A MERITORIOUS INVENTION.

When an invention is developed or a discovery is made in industry, the inventor or owner generally has the choice

of maintaining it in secrecy and possibly continuing his hold on the invention in perpetuity, or he may apply for a patent and obtain a limited monopoly in return for a full disclosure. This choice is particularly characteristic of the computer programming industry. For example, a very large computer program (called APT) for controlling three- and five-axes automatically programmed machine tools is kept in secrecy and available only to those who pay an annual fee. Such fees are used to improve and maintain the program, but the benefits of many years of research and development is not available to the public, and may never be.

A university researcher, on the other hand, is in a position similar to a medical researcher or a legal scholar. He must publish the results of his research as a means of prompting further investigation and to achieve recognition in his field. Were it not for the patent system, these publications would deprive the researcher as well as the university of a just reward for public benefit resulting from their work. Publication, not secrecy, should be encouraged, and strong Patent Laws are the best way to encourage a complete public disclosure.

C.

THE COPYRIGHT LAWS DO NOT AFFORD COMMENSURATE PROTECTION FOR INVENTIONS INVOLVING DIGITAL COMPUTERS WHEN A PATENTABLE INVENTION IS INVOLVED.

It has been urged upon this Court that copyright protection is adequate for computer programs.[1] It is submitted that copyright protection is not adequate for de-

---

[1] See Brief Amicus Curiae for Burroughs Corporation, P. 22, and Brief for Amicus Curiae International Business Machines Corporation, P. 30.

velopments involving digital computers when the contribution to the art rises to the level of unobviousness called for in 35 U.S.C. 103 and as analyzed in *Graham* v. *Deere*, 383 U.S. 1. Even though the Copyright Office Announcement of May 19, 1964, has indicated that the Copyright Office will consider registration for a computer program as a "book" in Class A, the announcement itself expresses misgivings as to whether computer programs are proper subject matter for copyright. Further, the only act that will infringe a copyright is a direct reproduction or duplication of the thing copyrighted. It is not the idea or contribution that is copyrighted, only the particular, narrow expression or form of that idea or contribution, as registered in the Copyright Office, *Peter Pan Fabrics, Inc.* v. *Martin Weiner Corp.*, 274 F. 2d 487 (2d Cir. 1960).

Where there is a public interest in facts being in the public domain as with scientific journals, business procedures, maps or compilations, courts have emphasized the actual appropriation of language in finding infringement, *Baker* v. *Selden*, 101 U.S. 99; *Holdridge* v. *Knight Publishing Corp.*, 214 F. Supp. 921 (S.D. Calif. 1963), and see *Yankwich*, "Legal Protection of Ideas, a Judge's Approach," 43 Va. L. Rev. 375 (1957).

The protection afforded under the Copyright Laws is particularly inadequate as a means of protecting the useful results of research for university faculty members due to the emphasis on publication in scientific and trade journals. Such a publication would contain the gist or "heart" of the actual advancement or contribution, it would not be a mere listing of particular program instructions, as would be included in a registration for copyright.

It should also be noted that there is serious doubt that the courts would uphold the copyrightability of a computer program when the expression of the program is a deck of punched cards or a magnetic tape. It may well result that copying directly of either of these media would not be an infringement of a copyright. This Court held in the case of *White-Smith Music Publishing Company* v. *Apollo Co.*, 209 U.S. 1, that short of special statutory protection, a copyright cannot be infringed unless the accused act results in the production of something tangible which can be observed by a human being so as to give "every person seeing it the idea created by the original", quoting from Bailey, J. in *West* v. *Francis*, 5 BARN & ALD. 743, 209 U.S. at 17. In the *White-Smith* case, the score for a musical composition in the form of sheet music had been copyrighted and the defendant implemented a coding of the music on a perforated roll designed to control a player piano. This was held not to constitute an infringement of the copyright.

Relating this to computer programs, it would therefore appear that the only true subject matter, short of a statutory revision, that could be properly copyrighted is a list of instructions printed so as to be intelligible to a human being. A person could then take that list and either encode it directly onto magnetic tape or punch a deck of cards to implement the corresponding machine code, without infringing the copyright.

D.

ONLY A SMALL PERCENTAGE OF ALL COMPUTER PROGRAMS, EVEN AT A UNIVERSITY COMPUTATION CENTER, ARE SERIOUSLY CONSIDERED FOR PATENTING.

The environment at a university places emphasis on conducting research as a means of maintaining and enhancing the skills of educators. There is further emphasis on the publication of research results in technical and

scientific journals. This is true of the computer sciences as well as for other fields of electrical engineering, physics, veterinary medicine, and so on.

Iowa State University has an extensive computation center, in terms both of staff and physical equipment. The general purpose digital computer has become an indispensable tool in conducting basic and applied research in all fields of science and applied technology. On a large, programmable, general purpose digital computer, problems can be analyzed which would require years of human computation. The digital computer has afforded a means of solving problems which heretofore were not even considered solvable. Further, physical systems, whether small or large, may be simulated on a digital computer so that new techniques for the solution of problems may be tried and analyzed even before physical hardware is designed.

Of all the large number of computer programs that are written at Iowa State University, only a very small number indeed is ever considered for possible patenting. Those programs which are directed to the solution of ordinary recordkeeping or computational problems are not considered as patentable because they do not rise to the level of invention called for in 35 U.S.C. 103, as interpreted by the courts.

However, occasions do arise in which a truly unique and inventive solution to a problem is conceived by an inventor, and is reduced to practice on a digital computer. Of the total research conducted employing the use of a computer at Iowa State University, it is estimated that less than one per cent is ever seriously considered for patenting. The question arises: should even this relatively small number of inventions be rendered unpatentable merely because they are reduced to practice

ugh the agency of a programmable general purpose tal computer? The answer must be "no" when one iders that such inventions would otherwise have been lered patentable if the inventor had designed and built pecial purpose digital computer or a functionally valent analog computer to implement the solution to problem.

CONCLUSION.

n invention which is independent of the apparatus which it is performed and which contemplates the use general purpose programmable digital computer ld be held to come within the statutory definition patentable process.

ere are substantial policy considerations, including eed to afford adequate reward for meritorious inven- and the desirability of fostering complete and ade- disclosure to the public, for including computer- ed method or process inventions in the statutory es of invention under 35 U.S.C. 100 (b) and 101. For reasons, it is respectfully submitted that the deci- of the Court below should be upheld.

Respectfully submitted,

TIMOTHY L. TILTON

Attorney for Amicus Curiae Iowa State University Research Foundation, Inc.

ON, TILTON, FALLON
LUNGMUS
th LaSalle Street
, Illinois 60604
Ndover 3-1841
Counsel

7, 1972